

Daniel Zalles:

Jim, let me know when you want me to start. --Dan

James Acker:

Dan, I'll make you the presenter now. After you're done, you can make me the presenter again.

1. DICCE provides a pathway for access to and use of Giovanni data in middle school and high school classrooms.
2. Our strategy for this pathway is to help novice student and teacher users understand the technical terminology of the Giovanni data and visualizations, understand the basics of Giovanni visualization, comprehend the meaning of each data parameter, how each is measured, and whether the sources are data assimilation models, surface data collection instruments, or a remote-sensing satellites.
3. Teachers and students run regional queries and use output from those queries to create lessons around what we call the DICCE Learning Environment, a tool on the SRI website. We also encourage teachers to consider importing the geo-output into Google Earth, where it can be overlaid by familiar geo referencing such as cities and roads, which the Giovanni visualizations do not provide. Google Earth in addition provides interactive opportunities for students and teachers to integrate the Giovanni output with data from other Google Earth compatible sources and even data layers that students and teachers input themselves from their own data collection procedures.
4. Rather than navigating through mission idiosyncrasies, users go directly to a base map that they used to select a query area, and a list of data parameters organized by Earth systems. They select the data parameters, then specify the types of visualizations they want to investigate and the time ranges. We provide tutorial help for them to understand the basic structures of Giovanni maps, time series plots, and vertical profiles.
5. Early in the project, we decided that rather than provide users access to all of the Giovanni data, we would focus on key "basic" data and organize the data not by mission but by Earth system domain. Our criteria for selection were that the data needed to be conceptually understandable to a mainstream high school level of

understanding and be related to causes and effects of current climate change. We first chose monthly parameters, which we broke into the categories Physical Ocean, Ocean Biosphere, Physical Atmosphere, Atmospheric Gases, Precipitation, Energy, Physical Land, and Land Biosphere.

6. Then, more recently, we developed a set of daily parameters. The daily data are especially useful for looking at air pollutants.

7. We then provide a set of supports on the DICCE Giovanni Resources Page. For example, this table differentiates the sources, measurement units, and palette characteristics of the data parameters.

8. This support document is a schema of how each of the monthly data parameters factors in to our knowledge about current climate change. This is the first of three slides that build more information. This slide diagrams the certainties. The Giovanni data parameters are in italics.

9. This slide superimposes mitigating influences on global warming, in light blue.

10.and this slide overlays the uncertainties. Together these slides provide students a big picture that they can use to build meaning while interpreting regional geographic data about the various data parameters in our basic monthly data set.

11. The DICCE Learning Environment provides a curriculum authoring tool with templates designed to create data-centered learning activities, presentations, and assessments around images from Giovanni data sets. Teachers and students with authoring privileges can save those images to a local drive, then upload them into DICCE LE.

12. Teacher and student authors can also copy and adapt other published works or create their own work from scratch.

13. Authors can create drafts or published versions of their work. Published

versions appear in the common space on the site, but an author can easily un-publish and re-publish, and edit any version, whether in draft form or in a published state. DICCE LE is also a repository of curriculum and assessment and presentation exemplars open to any users, authors or not. Published materials can be viewed online or printed out and used as paper activities in the classroom. This makes it easy to use in any classroom, whether or not students have access to computers.

14. Here are two learning activity examples. In the first, students examine time series plots about climate change in central and northern New Mexico. In the second, students investigate maps of sea surface temperatures in the Western Pacific during a particularly strong El Niño year. One of our teachers lives in northern New Mexico and another lives in San Jose California.

15. Eventually, we plan to have assessments for each of the major DICCE data parameters. Teachers are able to adapt the assessments to suit their students' grade level appropriate needs just as they can adapt the learning activities and presentations. Each assessment per data parameter starts with basic visualization and interpretation questions, then moves into more complex questions that require not only does interpretive skills but also science knowledge about what the data parameters represent. In this example, students are asked a question about some maps of CO₂ in a large section of Europe and North Africa. Recently, we added a tool that lets authors create versions of learning activities and assessments with answer keys that can be hidden from students.

Bob Myers:

Dan is your powerpoint available somewhere?

Daniel Zalles:

16. For any major data parameter, we also developed trend guides that help students interpret regional increases or decreases in the different data parameters in relationship to the causes and effects of climate warming, and in terms of whether there may be alternative explanations for the trend. These trend guides are available in both DICCE G and DICCE LE.

Is everybody seeing my slides?

Bob Myers:

I am

Ruth Krumhansl:

yes

Bob Myers:

I want to get a copy later.

Tim Moore:

yes

Joan Labay-Marquez:

yes

Daniel Zalles:

So yes, I'll post the powerpoint on our web site soon

Bob Myers:

thanks

Daniel Zalles:

I'm glad everyone is seeing the slides. I'll continue now.

James Acker:

Also on the workshop Web site

Daniel Zalles:

17. Lastly, we have tutorials and other help documents that teacher authors can make available to their students completing doing DICCE learning activities. For example, this slide shows how a student can access any tutorial about how to interpret Giovanni map data when doing a map centered learning activity.

18. Everybody can use the content in DICCE G and DICCE LE, but authoring privileges in DICCE LE are restricted to project participants. Yet, the DICCE LE software is designed to extend authorship privileges to any number of people by permission.

We have been pleased to find that teachers are getting comfortable using DICCE without lengthy time-consuming training. We have done one-on-one training and group workshop training, and have tested independent self training as well.

20. Though we are still in development, we have gotten some feedback from students and teachers during the first piloting year, which ended this past month. Over the summer, a large group of diverse high school students in a Southern California community did a DICCE learning activity that the teachers developed during the workshop the prior week. They compared San Diego and Greenland data. There was much positive feedback from the students about the experience.

21. These are the key URLs.

22. Very soon we'll have a master DICCE entry site that links to the other sites

James Acker:

Also accessible from the DICCE Resource page (findable with Google) and from the Giovanni home page (<http://giovanni.gsfc.nasa.gov/>) under "Application and Education Portals" at present.

Daniel Zalles:

23. Thanks to Jim for organizing this important workshop. Any questions?

Tim Moore:

yes, I have one...

Daniel Zalles:

OK.

Tim Moore:

for Daniel - did your workshops focus on learning how to use and navigate through Giovanni, or was it more on the content of Earth Science modules

Daniel Zalles:

Both. Our goal was to build capacity of the teachers to understand the data and manipulate the software to create their own local data investigations. Only recently have we added more module exemplars for teachers who'd rather use or adapt something we give them rather than do all the work themselves.

James Acker:

Dan, could you mention where our pilot groups of teachers are located?

Daniel Zalles:

Sure. We have teachers in New Hampshire, Maine, and three places in CA: Oxnard, San Diego, and San Jose. A teacher in Colorado recently asked to get authoring privileges too. Also, some folks active as curriculum developers in ESSEA now have authoring privileges too.

Ruth Krumhansl:
don't forget New Mexico

Daniel Zalles:
Oh yes, we also have a teacher in northern New Mexico

James Acker:
Thanks. I want to mention that Dan and I attended the ESSEA annual meeting in August and presented DICCE to the attendees there, many of whom author ESSEA modules or use them for curriculum training.

Daniel Zalles:
I hope I didn't go too fast. If anybody wants to re-see an earlier slide, let me know.

James Acker:
Paul Adams of Fort Hays State University showed 2 modules on Tuesday. His presentation will be online at the workshop Web site too.

Daniel Zalles:
Any other questions?

James Acker:
Thanks, Dan. We can take about a five-minute break and then start our roundtable.